Appendix 9: BMD Analysis of Brain Cholinesterase Inhibition Data

Dimethoate: Issues Related to the Hazard and Dose Response Assessment

Analysis of variance (ANOVA) is typically used to identify statistically significant difference between various dose groups within a toxicity study. Although the group means and standard deviations can be used to characterize the response of the experimental dose groups, ANOVA does not characterize the dose-response relationship. Benchmark dose (BMD) analysis attempts to model the dose-response relationship with a dose-response curve that can be described by a mathematical function. The dose-response curve which is estimated based on the experimental observations interpolates the magnitude of the response for any dose within the experimental dosing range. Various mathematical models can be used to model this dose-response curve. Once a BMD model has been selected, the dose resulting in a specified response (i.e. benchmark response, BMR) is determined. The BMR is expressed as certain percent change in the control group response (i.e., background). The dose resulting in the BMR is termed the "benchmark dose". Generally, the dose resulting in a BMR of X% is referred to as the BMD_X. The corresponding lower 95% confidence limit on the BMD_X is the $BMDL_X$.

A BMD analysis of the brain cholinesterase inhibition (ChEI) data from various dimethoate studies was performed using EPA's OPCumRisk program. The exponential function used for modeling the effect of dimethoate on cholinesterase activity (ChE) was:

$$y = B + (A - B) \times e^{-m*dose}$$

where *y* is cholinesterase activity, *dose* is the dose of dimethoate, in mg/kg/day, *m* is the dose scale factor, *A* is background cholinesterase activity, and *B* is the limiting high-dose ChE activity. Both *y* (cholinesterase activity) and dose were extracted from the oral toxicity studies. The equation for the exponential model reflects the observation that cholinesterase activity decreases to a limiting value (*B*) as dose increases. The model has three parameters to be estimated: *m* (dose scale factor), *A* (background), and *B* (limiting high-dose ChE activity). The OPCumRisk program can be obtained at www.epa.gov/pesticides/cumulative/EPA_approach_methods.htm. OPCumRisk utilizes the same dose-response model (i.e., exponential model) as utilized in the Preliminary OP Cumulative Risk Assessment (CRA). This method has been previously evaluated by the FIFRA SAP (2001, 2002). For the final OP CRA, the exponential model was expanded to include a “low dose shoulder.” The low dose shoulder corresponds to a part of the dose-response curve where the response of the low dose group is similar to that of the control group. However, for the OP CRA there was no evidence of low dose shoulder for dimethoate. Similar to the observations of the OP CRA, the brain ChEI data from the studies evaluated here do not suggest the need to model a low dose shoulder.

The calculated BMD values represent the dose at which a 10% reduction in

cholinesterase activity compared to background activity is expected. For each brain ChE data set, parameters were estimated including all dose groups. The OPCumRisk program utilizes a decision algorithm for choosing the appropriate options for the exponential model. Generally the model is fitted until an adequate p-value for the χ^2 goodness of fit (GoF) is obtained. The decision algorithm is provided below.

1. If the p-value for the GoF statistic is greater than 0.05, then the model's fit was considered adequate and the parameter estimates were used.

2. Otherwise (that is, if the p-value was less than 0.05, or no estimates resulted because the model did not converge), the horizontal asymptote was set to zero and the model was refit to the data.

3. If the p-value was still less than 0.05, or there was no model fit at all, then the highest dose was dropped and the model was refit with the horizontal asymptote set to zero until either the p-value exceeded 0.05, or there are only three doses remaining.

Although the user can specify options not consistent with default decision algorithm utilized by OPCumRisk, all BMD values provided in OPP's current analysis are based on the default decision algorithm. The decision algorithm and technical details of the "basic" exponential model used in this BMD analysis can be obtained at www.epa.gov/scipoly/sap/2001/september/rpfappendix1.pdf.

Tables A9.1 and A9.2 contain summary information of the OPCumRisk model runs for the comparative ChEI (gavage) study, the DNT (gavage) range-finding study, the one-generation dietary range-finding reproductive toxicity study, two two-generation dietary reproductive toxicity studies, and a 28-day dietary toxicity study.

Clear dose-response relationships were exhibited by a majority of the brain ChEI data from repeated dosing and adequate model fits were attained for most of the data sets. The GoF statistic for the day 28 adult females from the 28-day dietary study and the PND 42 males from one-generation reproductive toxicity study result in highly significant p-values (i.e. < 0.01) indicating the model's lack of fit. For the day 28 females, the brain ChE levels of the low dose group were higher than those of the control group. For the PND 42 males, although the brain ChE levels of the medium dose group were higher than the model estimates, visually the fit of the model seems reasonable. Additionally, the GoF statistic for the day 218 adult females from the "new" two-generation reproductive toxicity study has a borderline significant p-value of 0.057 indicating the fit of the model is questionable. All BMD values were within their respective experimental dose ranges except for the PND 4 groups from the comparative ChEI study.

For the data sets providing adequate fits and BMD estimates within their

experimental dose ranges, the BMD_{10} and $BMDL_{10}$ values are consistent across sex and age for all studies. The text and graphical output from the OPCumRisk model are included at the end of this appendix. The output files are identified by the subpopulation, sex, and MRID number of the corresponding data sets.

Day 11 Adults : Female : 45529702

```
                DIMETHOATE:11-D:BRAIN:F:WHOLE
                 Wed Aug 18 18:39:56 2004
          MRID: 45529702   Guideline: NONGUIDELINE
        Continuous Exponential Model (Decreasing)
        Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power


   The BMD corresponds to a dose that results in a 10% reduction in the
                    response relative to the control
    ------------------------------------------------------------------
                    Summary of Model Fitting Results

      AIC       BIC    logLik
 546.8830  551.2802 -270.4415
```

Coefficients:
         Value   Std.Error
A 1.467991e+04 331.88894597
m 2.875262e-01   0.01490362

Correlation:
          A   m
A 1.0000000 0.5903737
m 0.5903737 1.0000000

Approximate 95% confidence intervals

 Coefficients:
         lower   est.   upper
A 1.401751e+04 1.467991e+04 1.537360e+04
m 2.586446e-01 2.875262e-01 3.196329e-01

 Residual standard error:
   lower   est.   upper
1225.850 1534.016 2050.478

Degrees of freedom: 32 total; 30 residual

                            Goodness of Fit
 The chi-squared goodness-of-fit values should be taken as general
indications of fit only. P-values are likely to be inaccurate to some
degree

Pearson Chi-Square Statistic: 0.7123 with 2 degrees of freedom. P =
0.7

  dose n   chei Expected   sd   Exp.SD   X2 Resid.
1 0.0 8 14868.75 14679.905 1399.7289 1513.3442 0.35294916
2 0.1 8 13912.50 14263.830 446.2142 1470.6675 -0.67568682
3 0.5 8 12881.25 12714.161 845.1278 1311.6610 0.36030474
4 3.0 8 6187.50 6195.981 1077.6131 641.5657 -0.03738933

BMD Computation

BMD = 0.3664: BMDL = 0.3377

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.2875
se: 0.0149
var=se^2: 0.0002221
Per cent. of background at unit dose: 75
Per cent. of background at the highest dose: 42
ED50 (95% CI): 2.411 (2.178 , 2.669)

ln(Potency) -1.246
se[log(Potency)]: 0.05183
se[log(Potency)]^2: 0.002687

Day 11 Adults : Male : 45529702

DIMETHOATE:11-D:BRAIN:M:WHOLE
Wed Aug 18 18:40:01 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
580.8117	586.6747	-286.4059

Coefficients:

	Value	Std.Error
A	1.418582e+04	6.693422e+02
B	6.934757e+02	2.463564e+04
m	2.295838e-01	6.112029e-01

Correlation:

	A	B	m
A	1.0000000	0.6252848	0.6441556
B	0.6252848	1.0000000	0.9990744
m	0.6441556	0.9990744	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.288084e+04	1.418582e+04	1.562301e+04
B	1.935073e-29	6.934757e+02	2.485221e+34
m	9.914506e-04	2.295838e-01	5.316323e+01

Residual standard error:

lower	est.	upper
1881.485	2362.467	3175.900

Degrees of freedom: 32 total; 29 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.02856 with 1 degrees of freedom. P = 0.866

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	14100.00	14185.82	529.1503	2376.373	-0.102149399
2	0.1	8	13987.50	13879.59	661.5728	2325.356	0.131255835
3	0.5	8	12700.00	12722.60	547.7226	2132.402	-0.029977672
4	3.0	8	7468.75	7469.37	2484.3708	1251.247	-0.001401282

BMD Computation

BMD = 0.4839: BMDL = 0.2183

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.2296
se: 0.6112
var=se^2: 0.3736
Per cent. of background at unit dose: 79
Per cent. of background at the highest dose: 50
ED50 (95% CI): 3.019 (0.01636 , 557.2)

ln(Potency) -1.471
se[log(Potency)]: 2.662
se[log(Potency)]^2: 7.087

GD 20 Dams : Female : 45529702

DIMETHOATE:15-D:BRAIN:F:WHOLE
Thu Sep 09 15:28:34 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
546.7020	551.0992	-270.3510

Coefficients:

	Value	Std.Error
A	1.326628e+04	338.81486611
m	3.176544e-01	0.01701312

Correlation:

	A	m
A	1.0000000	0.5864056
m	0.5864056	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.259207e+04	1.326628e+04	1.397660e+04
m	2.847418e-01	3.176544e-01	3.543713e-01

Residual standard error:

lower	est.	upper
1216.627	1522.473	2035.049

Degrees of freedom: 32 total; 30 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 1.034 with 2 degrees of freedom. P = 0.596

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	12837.50	13266.284	1372.6278	1543.4002	-0.7857879

2	0.1	8	13043.75	12851.498	530.1196	1496.1318	0.3634514
3	0.5	8	11562.50	11318.048	299.7022	1321.0981	0.5233637
4	3.0	8	5093.75	5115.436	1080.8190	607.0403	-0.1010440

BMD Computation

BMD = 0.3317: BMDL = 0.3048

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.3177
se: 0.01701
var=se^2: 0.0002894
Per cent. of background at unit dose: 73
Per cent. of background at the highest dose: 39
ED50 (95% CI): 2.182 (1.965 , 2.424)

ln(Potency) -1.147
se[log(Potency)]: 0.05356
se[log(Potency)]^2: 0.002869

GD 20 Fetuses : Both : 45529702

DIMETHOATE:15-D:PLASMA:F:WHOLE
Wed Aug 18 19:36:13 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
424.5588	428.9560	-209.2794

Coefficients:

	Value	Std.Error
A	1689.2787183	42.19501281
m	0.1178956	0.01639579

Correlation:

	A	m
A	1.0000000	0.5920042
m	0.5920042	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1605.2660561	1689.2787183	1777.6882389
m	0.0887461	0.1178956	0.1566195

Residual standard error:

lower	est.	upper
162.1117	202.8648	271.1640

Degrees of freedom: 32 total; 30 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 4.084 with 2 degrees of freedom. P = 0.130

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	1781.25	1689.279	175.1275	192.4780	1.3515001

```
2  0.1 8 1568.75 1669.480 173.0762 190.2102 -1.4978530
3  0.5 8 1600.00 1592.578 136.2770 181.4030  0.1157292
4  3.0 8 1187.50 1186.034 164.2081 134.8841  0.0307423
```

BMD Computation

BMD = 0.8937: BMDL = 0.7273

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.1179
se: 0.0164
var=se^2: 0.0002688
Per cent. of background at unit dose: 89
Per cent. of background at the highest dose: 70
ED50 (95% CI): 5.879 (4.477 , 7.722)

ln(Potency) -2.138
se[log(Potency)]: 0.1391
se[log(Potency)]^2: 0.01934

PND 4 Offspring : Female : 45529702

DIMETHOATE:0-D:BRAIN:F:WHOLE
Thu Aug 19 14:59:15 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
424.0659	428.2695	-209.0329

Coefficients:

	Value	Std.Error
A	2.811752e+03	62.14188020
m	2.335455e-02	0.01407783

Correlation:

	A	m
A	1.0000000	0.6016185
m	0.6016185	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	2.687299e+03	2.811752e+03	2.941969e+03
m	6.793986e-03	2.335455e-02	8.028202e-02

Residual standard error:

lower	est.	upper
225.6483	284.3424	384.5593

Degrees of freedom: 30 total; 28 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 4.182 with 2 degrees of freedom. P = 0.124

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	7	2785.714	2811.752	299.9504	271.9717	-0.2532981

```
2  0.1 8 2940.625 2805.193 249.9777 271.3274  1.4117967
3  0.5 7 2632.143 2779.110 219.2384 268.7652 -1.4467549
4  3.0 8 2637.500 2621.494 245.6769 253.2912  0.1787392
```

BMD Computation

BMD = 4.511: BMDL = 2.265

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.02335
se: 0.01408
var=se^2: 0.0001982
Per cent. of background at unit dose: 98
Per cent. of background at the highest dose: 93
ED50 (95% CI): 29.68 (9.106 , 96.73)

ln(Potency) -3.757
se[log(Potency)]: 0.6028
se[log(Potency)]^2: 0.3634

PND 4 Offspring : Male : 45529702

DIMETHOATE:0-D:BRAIN:M:WHOLE
Thu Aug 19 14:59:20 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
497.8960	502.5621	-245.9480

Coefficients:

	Value	Std.Error
A	2.968973e+03	60.11820162
m	2.476742e-02	0.01313410

Correlation:

	A	m
A	1.0000000	0.5899821
m	0.5899821	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	2.849146e+03	2.968973e+03	3.093838e+03
m	8.420172e-03	2.476742e-02	7.285183e-02

Residual standard error:

lower	est.	upper
243.4088	301.7801	397.2265

Degrees of freedom: 35 total; 33 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 5.049 with 2 degrees of freedom. P = 0.0801

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	10	3120.000	2968.973	242.6131	287.2535	1.6626109

```
2  0.1  8 2825.000 2961.628 219.5775 286.5337 -1.3486827
3  0.5  8 2865.625 2932.432 225.1735 283.6723 -0.6661198
4  3.0  9 2769.444 2756.367 339.7558 266.4247  0.1472493
```

BMD Computation

BMD = 4.254: BMDL = 2.272

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.02477
se: 0.01313
var=se^2: 0.0001725
Per cent. of background at unit dose: 98
Per cent. of background at the highest dose: 93
ED50 (95% CI): 27.99 (9.898 , 79.13)

ln(Potency) -3.698
se[log(Potency)]: 0.5303
se[log(Potency)]^2: 0.2812

PND 21 Offspring : Female : 45529702

DIMETHOATE:11-D:BRAIN:F:WHOLE
Wed Aug 18 20:12:24 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
517.114	522.977	-254.557

Coefficients:

	Value	Std.Error
A	1.023172e+04	244.4269786
B	4.761725e+03	1434.4099641
m	5.070756e-01	0.3102889

Correlation:

	A	B	m
A	1.0000000	0.5727942	0.6245823
B	0.5727942	1.0000000	0.9863055
m	0.6245823	0.9863055	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	9743.8245469	1.023172e+04	10744.040990
B	2571.5535403	4.761725e+03	8817.247872
m	0.1450599	5.070756e-01	1.772549

Residual standard error:

lower	est.	upper
689.2430	865.4407	1163.4250

Degrees of freedom: 32 total; 29 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.05658 with 1 degrees of freedom. P = 0.812

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	10275.00	10231.718	376.0699	861.9491	0.142027400
2	0.1	8	9906.25	9961.263	313.3204	839.0650	-0.185444384
3	0.5	8	9018.75	9006.715	247.7578	758.3745	0.044884938
4	3.0	8	5956.25	5956.611	964.8973	501.7452	-0.002033078

BMD Computation

BMD = 0.4084: BMDL = 0.2609

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.5071
se: 0.3103
var=se^2: 0.09628
Per cent. of background at unit dose: 60
Per cent. of background at the highest dose: 22
ED50 (95% CI): 1.367 (0.412 , 4.536)

ln(Potency) -0.6791
se[log(Potency)]: 0.6119
se[log(Potency)]^2: 0.3744

PND 21 Offspring : Male : 45529702

DIMETHOATE:11-D:BRAIN:M:WHOLE
Wed Aug 18 20:12:31 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

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Summary of Model Fitting Results

AIC	BIC	logLik
490.4541	496.3170	-241.2270

Coefficients:

	Value	Std.Error
A	1.030886e+04	163.3439882
B	4.209439e+03	1128.3793005
m	4.723459e-01	0.1929238

Correlation:

	A	B	m
A	1.0000000	0.5845660	0.6296056
B	0.5845660	1.0000000	0.9903008
m	0.6296056	0.9903008	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	9980.1364087	1.030886e+04	10648.405296
B	2432.9062934	4.209439e+03	7283.213837
m	0.2048675	4.723459e-01	1.089049

Residual standard error:

lower	est.	upper
462.2901	580.4697	780.3343

Degrees of freedom: 32 total; 29 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.2933 with 1 degrees of freedom. P = 0.588

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	10375.00	10308.857	207.0197	576.9300	0.324268111
2	0.1	8	9943.75	10027.452	331.0562	561.0777	-0.421947102
3	0.5	8	9043.75	9025.808	339.5769	504.7310	0.100541175
4	3.0	8	5687.50	5688.128	566.7892	318.2699	-0.005577083

BMD Computation

BMD = 0.392: BMDL = 0.2888

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.4723
se: 0.1929
var=se^2: 0.03722
Per cent. of background at unit dose: 62
Per cent. of background at the highest dose: 24
ED50 (95% CI): 1.467 (0.659 , 3.268)

ln(Potency) -0.75
se[log(Potency)]: 0.4084
se[log(Potency)]^2: 0.1668

GD 20 Dams : Female : 45529701

DIMETHOATE:15-D:BRAIN:F:WHOLE
Thu Sep 09 15:28:26 2004
MRID: 45529701 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

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Summary of Model Fitting Results

AIC	BIC	logLik
316.7494	320.7324	-154.3747

Coefficients:

	Value	Std.Error
A	1.337673e+04	489.4951784
B	1.239493e+03	135.0241940
m	5.968458e-01	0.0463716

Correlation:

	A	B	m
A	1.0000000	0.2136947	0.4272598
B	0.2136947	1.0000000	0.8419012
m	0.4272598	0.8419012	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.238285e+04	1.337673e+04	1.445039e+04
B	9.849838e+02	1.239493e+03	1.559765e+03
m	5.066082e-01	5.968458e-01	7.031567e-01

Residual standard error:

lower	est.	upper
1058.068	1410.028	2113.835

Degrees of freedom: 20 total; 17 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 2.307 with 1 degrees of freedom. P = 0.129

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	5	12710	13376.732	1333.8853	1470.2133	-1.01404205
2	0.2	5	12680	12011.051	640.8978	1334.3441	1.12101123
3	3.0	5	3240	3264.840	411.4000	386.4720	-0.14372031
4	6.0	5	1580	1577.464	195.5761	160.4225	0.03535067

BMD Computation

BMD = 0.1956: BMDL = 0.1755

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.5968
se: 0.04637
var=se^2: 0.00215
Per cent. of background at unit dose: 55
Per cent. of background at the highest dose: 2.8
ED50 (95% CI): 1.161 (0.9973 , 1.352)

ln(Potency) -0.5161
se[log(Potency)]: 0.07769
se[log(Potency)]^2: 0.006036

GD 20 Fetuses : Female : 45529701

DIMETHOATE:15-D:BRAIN:F:WHOLE
Thu Aug 19 20:06:58 2004
MRID: 45529701 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
319.4744	323.4574	-155.7372

Coefficients:

	Value	Std.Error
A	2053.1677722	264.4939877
B	355.9855520	4201.6221520
m	0.1290254	0.4747553

Correlation:

	A	B	m
A	1.0000000	0.3581436	0.4168177
B	0.3581436	1.0000000	0.9949052
m	0.4168177	0.9949052	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.564541e+03	2053.1677722	2.694399e+03
B	5.454544e-09	355.9855520	2.323305e+13
m	5.484962e-05	0.1290254	3.035127e+02

Residual standard error:

lower	est.	upper
610.5789	813.6847	1219.8306

Degrees of freedom: 20 total; 17 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.1228 with 1 degrees of freedom. P = 0.726

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	5	1970	2053.168	288.5308	794.6247	-0.234033477
2	0.2	5	2100	2009.932	871.7798	778.4200	0.258726599
3	3.0	5	1500	1508.439	500.0000	586.8601	-0.032154703
4	6.0	5	1140	1138.547	638.7488	440.0132	0.007384745

BMD Computation

BMD = 0.9994: BMDL = 0.3558

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.129
se: 0.4748
var=se^2: 0.2254
Per cent. of background at unit dose: 88
Per cent. of background at the highest dose: 46
ED50 (95% CI): 5.372 (0.003963 , 7282)

ln(Potency) -2.048
se[log(Potency)]: 3.68
se[log(Potency)]^2: 13.54

GD 20 Fetuses : Male : 45529701

DIMETHOATE:15-D:BRAIN:M:WHOLE
Thu Aug 19 20:07:03 2004
MRID: 45529701 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
322.9258	326.9087	-157.4629

Coefficients:

	Value	Std.Error
A	2255.4458807	281.9229830
B	1067.4879280	1662.2545211
m	0.2189783	0.5838925

Correlation:

	A	B	m
A	1.0000000	0.2889127	0.3756791
B	0.2889127	1.0000000	0.9821411
m	0.3756791	0.9821411	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.732608e+03	2255.4458807	2936.05657
B	3.995417e+01	1067.4879280	28520.93850
m	7.892081e-04	0.2189783	60.75899

Residual standard error:

lower	est.	upper
649.9931	866.2098	1298.5732

Degrees of freedom: 20 total; 17 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.1795 with 1 degrees of freedom. P = 0.672

```
  dose n chei Expected       sd   Exp.SD   X2 Resid.
1  0.0 5 2150 2255.446 562.3611 840.8655 -0.28040649
2  0.2 5 2320 2204.541 675.0926 822.7411  0.31379672
3  3.0 5 1670 1683.370 564.1365 631.7107 -0.04732752
4  6.0 5 1390 1386.785 780.5447 516.1310  0.01392921
    ------------------------------------------------------------------
                            BMD Computation

                      BMD = 0.9615:  BMDL = 0.3167

    ------------------------------------------------------------------
                            Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background
activity

Potency: 0.219
se: 0.5839
var=se^2: 0.3409
Per cent. of background at unit dose: 80
Per cent. of background at the highest dose: 27
ED50 (95% CI): 3.165 ( 0.01701 , 589 )

ln(Potency) -1.519
se[log(Potency)]: 2.666
se[log(Potency)]^2: 7.11
```

PND 21 Offspring : Female : 45529701

```
                     DIMETHOATE:11-D:BRAIN:F:WHOLE
                        Thu Aug 19 19:00:10 2004
                  MRID: 45529701   Guideline: NONGUIDELINE
                 Continuous Exponential Model (Decreasing)
                 Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power


   The BMD corresponds to a dose that results in a 10% reduction in the
                    response relative to the control
    ------------------------------------------------------------------
                    Summary of Model Fitting Results

      AIC       BIC    logLik
 622.9066  629.2406 -307.4533

Coefficients:
         Value    Std.Error
A 9766.4268328 4.636244e+02
B  858.6043070 1.959891e+03
m    0.2210332 9.820677e-02
```

```
Correlation:
          A         B         m
A 1.0000000 0.3363009 0.4330857
B 0.3363009 1.0000000 0.9845464
m 0.4330857 0.9845464 1.0000000

Approximate 95% confidence intervals

 Coefficients:
         lower         est.        upper
A 8.867294e+03 9766.4268328 1.075673e+04
B 8.258369e+00  858.6043070 8.926718e+04
m 8.951104e-02    0.2210332 5.458062e-01

 Residual standard error:
   lower     est.    upper
1579.441 1958.203 2577.539

Degrees of freedom: 36 total; 33 residual
    ----------------------------------------------------------------------
                             Goodness of Fit
 The chi-squared goodness-of-fit values should be taken as general
indications of fit only.  P-values are likely to be inaccurate to some
degree

Pearson Chi-Square Statistic: 1.169 with 1 degrees of freedom.  P =
0.280

  dose  n     chei Expected        sd   Exp.SD   X2 Resid.
1  0.0 10 9337.500 9766.427 2774.8936 1929.595 -0.70293800
2  0.2  9 9886.111 9381.219  406.7998 1856.751  0.81576691
3  3.0  9 5413.889 5448.376  666.6276 1091.566 -0.09478175
4  6.0  8 3228.125 3223.492  749.5758  631.870  0.02073769
    ----------------------------------------------------------------------
                             BMD Computation

                     BMD = 0.5254:  BMDL = 0.3853

    ----------------------------------------------------------------------
                             Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background
activity

Potency: 0.221
se: 0.09821
var=se^2: 0.009645
Per cent. of background at unit dose: 80
Per cent. of background at the highest dose: 27
ED50 (95% CI): 3.136 ( 1.313 , 7.492 )

ln(Potency) -1.509
```

```
se[log(Potency)]: 0.4443
se[log(Potency)]^2: 0.1974
```

PND 21 Offspring : Male : 45529701

DIMETHOATE:11-D:BRAIN:M:WHOLE
Thu Aug 19 19:00:15 2004
MRID: 45529701 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
626.3808	632.7149	-309.1904

Coefficients:

	Value	Std.Error
A	1.052178e+04	466.9239984
B	4.149907e+03	651.4008126
m	4.434059e-01	0.1504221

Correlation:

	A	B	m
A	1.0000000	0.1936634	0.3376864
B	0.1936634	1.0000000	0.9055094
m	0.3376864	0.9055094	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	9613.4410869	1.052178e+04	1.151595e+04
B	3015.4017893	4.149907e+03	5.711256e+03
m	0.2223587	4.434059e-01	8.841967e-01

Residual standard error:

lower	est.	upper
1550.098	1921.824	2529.654

Degrees of freedom: 36 total; 33 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.007399 with 1 degrees of freedom. P = 0.931

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	10	10555.000	10521.783	529.3864	1916.438	0.054810535
2	0.2	9	9941.667	9981.048	542.7073	1817.253	-0.065013233
3	3.0	9	5838.889	5834.757	695.1968	1060.878	0.011684947
4	6.0	8	4593.750	4595.415	1680.0696	837.690	-0.005620692

BMD Computation

BMD = 0.407: BMDL = 0.2863

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.4434
se: 0.1504
var=se^2: 0.02263
Per cent. of background at unit dose: 64
Per cent. of background at the highest dose: 7
ED50 (95% CI): 1.563 (0.804 , 3.039)

ln(Potency) -0.8133
se[log(Potency)]: 0.3392
se[log(Potency)]^2: 0.1151

Day 91 Adults : Female : 46348201

DIMETHOATE:91-D:BRAIN:F:WHOLE
Thu Sep 09 14:20:57 2004
MRID: 46348201 Guideline: UNKNOWN
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
54.72549	61.48101	-23.36275

Coefficients:

	Value	Std.Error
A	7.8579481	0.2862688
B	1.9987050	0.3001868
m	0.3008430	0.0466104

Correlation:

	A	B	m
A	1.0000000	0.2039435	0.3840336
B	0.2039435	1.0000000	0.9507256
m	0.3840336	0.9507256	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	7.2988029	7.8579481	8.4599282
B	1.4743015	1.9987050	2.7096370
m	0.2197884	0.3008430	0.4117894

Residual standard error:

lower	est.	upper
0.7400548	0.9077489	1.1743976

Degrees of freedom: 40 total; 37 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 2.909 with 1 degrees of freedom. P = 0.088

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	10	7.89	7.857948	0.596	0.9072286	0.1117215
2	3.9	10	3.70	3.811251	0.578	0.4340145	-0.8105887
3	5.8	10	3.17	3.022105	0.281	0.3469903	1.3478290
4	7.5	10	2.55	2.612372	0.292	0.3032918	-0.6503265

BMD Computation

BMD = 0.4787: BMDL = 0.4049

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.3008
se: 0.04661
var=se^2: 0.002173
Per cent. of background at unit dose: 74
Per cent. of background at the highest dose: 10
ED50 (95% CI): 2.304 (1.701 , 3.122)

ln(Potency) -1.201
se[log(Potency)]: 0.1549
se[log(Potency)]^2: 0.024

Day 91 Adults : Male : 46348201

DIMETHOATE:91-D:BRAIN:M:WHOLE
Thu Sep 09 14:21:03 2004
MRID: 46348201 Guideline: UNKNOWN
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
101.94088	108.69639	-46.97044

Coefficients:

	Value	Std.Error
A	7.4512046	0.4355370
B	3.0457078	0.3864785
m	0.4636045	0.1428526

Correlation:

	A	B	m
A	1.0000000	0.1296738	0.3035647
B	0.1296738	1.0000000	0.9168315
m	0.3035647	0.9168315	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	6.6189777	7.4512046	8.3880703
B	2.3551961	3.0457078	3.9386682
m	0.2483135	0.4636045	0.8655557

Residual standard error:

lower	est.	upper
1.124437	1.379231	1.784376

Degrees of freedom: 40 total; 37 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.002618 with 1 degrees of freedom. P = 0.96

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	10	7.45	7.451205	0.487	1.3792849	-0.002761755
2	2.9	10	4.20	4.194143	1.048	0.7767216	0.023847433
3	4.4	10	3.61	3.618629	0.859	0.6699690	-0.040729921
4	6.1	10	3.31	3.306212	0.442	0.6119191	0.019573228

BMD Computation

BMD = 0.3997: BMDL = 0.2856

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.4636
se: 0.1429
var=se^2: 0.02041
Per cent. of background at unit dose: 63
Per cent. of background at the highest dose: 5.9
ED50 (95% CI): 1.495 (0.8173 , 2.735)

ln(Potency) -0.7687
se[log(Potency)]: 0.3081
se[log(Potency)]^2: 0.09495

PND 42 Offspring : Female : 46348201

DIMETHOATE:21-D:BRAIN:F:WHOLE
Thu Sep 09 14:28:36 2004
MRID: 46348201 Guideline: UNKNOWN
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
175.16891	184.69701	-83.58445

Coefficients:

	Value	Std.Error
A	7.6003104	0.36099304
B	1.7805163	0.21347974
m	0.3878520	0.05812968

Correlation:

	A	B	m
A	1.0000000	0.1525420	0.3487570
B	0.1525420	1.0000000	0.9196862
m	0.3487570	0.9196862	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	6.9144277	7.6003104	8.3542299
B	1.4023601	1.7805163	2.2606449
m	0.2877760	0.3878520	0.5227299

Residual standard error:

lower	est.	upper
1.396448	1.616334	1.919055

Degrees of freedom: 80 total; 77 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 1.07 with 1 degrees of freedom. P = 0.301

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	20	7.58	7.600310	1.008	1.6168074	-0.0561792
2	3.9	20	3.13	3.062800	0.684	0.6583985	0.4564556
3	5.8	20	2.30	2.394199	0.438	0.5110875	-0.8242677
4	7.5	20	2.14	2.097906	0.595	0.4442432	0.4237541

BMD Computation

BMD = 0.3608: BMDL = 0.3006

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.3879
se: 0.05813
var=se^2: 0.003379
Per cent. of background at unit dose: 68
Per cent. of background at the highest dose: 5.5
ED50 (95% CI): 1.787 (1.332 , 2.397)

ln(Potency) -0.9471
se[log(Potency)]: 0.1499
se[log(Potency)]^2: 0.02246

PND 42 Offspring : Male : 46348201

DIMETHOATE:21-D:BRAIN:M:WHOLE
Thu Sep 09 14:28:41 2004
MRID: 46348201 Guideline: UNKNOWN
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
146.54770	156.07581	-69.27385

Coefficients:

	Value	Std.Error
A	7.1404058	0.29424215
B	1.9809272	0.13223088
m	0.5895752	0.07318633

Correlation:

	A	B	m
A	1.0000000	0.1062892	0.3138343
B	0.1062892	1.0000000	0.8664410
m	0.3138343	0.8664410	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	6.5778893	7.1404058	7.7510267
B	1.7343709	1.9809272	2.2625336
m	0.4604572	0.5895752	0.7548995

Residual standard error:

lower	est.	upper
1.139107	1.318471	1.565405

Degrees of freedom: 80 total; 77 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 10.78 with 1 degrees of freedom. P = 0.00103

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	20	7.19	7.140406	0.629	1.3176255	0.1683269
2	2.9	20	2.75	2.914317	0.669	0.5242261	-1.4017756
3	4.4	20	2.62	2.366396	0.415	0.4329132	2.6198142
4	6.1	20	2.00	2.122411	0.333	0.3951855	-1.3852649

BMD Computation

BMD = 0.2527: BMDL = 0.2144

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.5896
se: 0.07319
var=se^2: 0.005356
Per cent. of background at unit dose: 55
Per cent. of background at the highest dose: 2.7
ED50 (95% CI): 1.176 (0.9218 , 1.5)

ln(Potency) -0.5284
se[log(Potency)]: 0.1241
se[log(Potency)]^2: 0.01541

Day 224 F0 Adults : Female : 42251501

DIMETHOATE:224-D:BRAIN:F:WHOLE
Thu Aug 26 20:41:51 2004
MRID: 42251501 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
228.3252	239.1992	-110.1626

Coefficients:

	Value	Std.Error
A	6.0719227	0.1314300
B	2.0966338	0.1005747
m	0.5506869	0.0683010

Correlation:

	A	B	m
A	1.0000000	0.2560419	0.4941034
B	0.2560419	1.0000000	0.7508411
m	0.4941034	0.7508411	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	5.8169413	6.0719227	6.3380810
B	1.9064805	2.0966338	2.3057529
m	0.4306714	0.5506869	0.7041471

Residual standard error:

lower	est.	upper
0.8224906	0.9314216	1.0738743

Degrees of freedom: 112 total; 109 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 1.226 with 1 degrees of freedom. P = 0.268

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.00	28	5.94	6.071923	0.663	0.9386286	-0.743711812
2	0.09	28	6.02	5.879703	0.743	0.9092383	0.816488596
3	1.30	28	4.03	4.039578	0.656	0.6266899	-0.080872575
4	6.04	28	2.24	2.239471	0.455	0.3460104	0.008094143

BMD Computation

BMD = 0.301: BMDL = 0.2542

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.5507
se: 0.0683
var=se^2: 0.004665
Per cent. of background at unit dose: 58
Per cent. of background at the highest dose: 3.6
ED50 (95% CI): 1.259 (0.9871 , 1.605)

ln(Potency) -0.5966
se[log(Potency)]: 0.124
se[log(Potency)]^2: 0.01538

Day 224 F0 Adults : Male : 42251501

DIMETHOATE:224-D:BRAIN:M:WHOLE
Thu Aug 26 20:41:59 2004
MRID: 42251501 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
296.6609	304.8164	-145.3304

Coefficients:

	Value	Std.Error
A	5.8136103	0.138919450
m	0.1476736	0.007752962

Correlation:

	A	m
A	1.0000000	0.6002978
m	0.6002978	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	5.5447215	5.8136103	6.0955388
m	0.1330814	0.1476736	0.1638659

Residual standard error:

lower	est.	upper
1.052030	1.190729	1.371887

Degrees of freedom: 112 total; 110 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.3875 with 2 degrees of freedom. P = 0.824

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.00	28	5.89	5.813610	0.730	1.1745112	0.34415709

```
2 0.09 28 5.63 5.736855 0.783 1.1590671 -0.48782618
3 1.30 28 4.83 4.798129 0.854 0.9701129  0.17384126
4 6.04 28 2.38 2.382745 0.755 0.4831303 -0.03006017
```

BMD Computation

BMD = 0.7135: BMDL = 0.6568

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.1477
se: 0.007753
var=se^2: 6.011e-05
Per cent. of background at unit dose: 86
Per cent. of background at the highest dose: 41
ED50 (95% CI): 4.694 (4.235 , 5.202)

ln(Potency) -1.913
se[log(Potency)]: 0.0525
se[log(Potency)]^2: 0.002756

Day 308 F1 Adults : Female : 42251501

DIMETHOATE:308-D:BRAIN:F:WHOLE
Thu Aug 26 21:05:40 2004
MRID: 42251501 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
257.9888	268.2462	-124.9944

Coefficients:

	Value	Std.Error
A	6.7556432	0.20376410
B	1.3648833	0.35281026
m	0.3620964	0.08279511

Correlation:

	A	B	m
A	1.0000000	0.4587784	0.5496875
B	0.4587784	1.0000000	0.9636699
m	0.5496875	0.9636699	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	6.3628877	6.7556432	7.1726419
B	0.8168962	1.3648833	2.2804691
m	0.2299466	0.3620964	0.5701923

Residual standard error:

lower	est.	upper
1.179171	1.348190	1.574217

Degrees of freedom: 96 total; 93 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.01891 with 1 degrees of freedom. P = 0.89

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.00	24	6.73	6.755643	0.988	1.3531631	-0.0928384613
2	0.09	24	6.61	6.582797	0.848	1.3185947	0.1010666155
3	1.30	24	4.73	4.731678	0.801	0.9482011	-0.0086682673
4	6.04	24	1.97	1.969975	0.609	0.3945617	0.0003132394

BMD Computation

BMD = 0.3698: BMDL = 0.2901

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.3621
se: 0.0828
var=se^2: 0.006855
Per cent. of background at unit dose: 70
Per cent. of background at the highest dose: 11
ED50 (95% CI): 1.914 (1.223 , 2.997)

ln(Potency) -1.016
se[log(Potency)]: 0.2287
se[log(Potency)]^2: 0.05228

Day 308 F1 Adults : Male : 42251501

DIMETHOATE:308-D:BRAIN:M:WHOLE
Thu Aug 26 21:05:46 2004
MRID: 42251501 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
349.7483	360.0057	-170.8741

Coefficients:

	Value	Std.Error
A	8.1030954	0.3089928
B	2.7575841	0.3192727
m	0.4705517	0.1225254

Correlation:

	A	B	m
A	1.0000000	0.333130	0.5087436
B	0.3331300	1.000000	0.8531240
m	0.5087436	0.853124	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	7.5121535	8.1030954	8.7405237
B	2.1911776	2.7575841	3.4704033
m	0.2805718	0.4705517	0.7891703

Residual standard error:

lower	est.	upper
1.796324	2.053804	2.398129

Degrees of freedom: 96 total; 93 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.6898 with 1 degrees of freedom. P = 0.406

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.00	24	7.87	8.103095	1.527	2.044994	-0.558402534
2	0.09	24	8.13	7.881441	1.630	1.989787	0.611966412
3	1.30	24	5.64	5.657089	1.365	1.433195	-0.058413586
4	6.04	24	3.07	3.069234	1.061	0.774274	0.004847639

BMD Computation

BMD = 0.3494: BMDL = 0.2565

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.4706
se: 0.1225
var=se^2: 0.01501
Per cent. of background at unit dose: 62
Per cent. of background at the highest dose: 5.8
ED50 (95% CI): 1.473 (0.8842 , 2.454)

ln(Potency) -0.7538
se[log(Potency)]: 0.2604
se[log(Potency)]^2: 0.0678

Day 205 F0 Adults : Female : 46181001

DIMETHOATE:205-D:BRAIN:F:WHOLE
Fri Aug 27 14:46:53 2004
MRID: 46181001 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
211.2150	221.6356	-101.6075

Coefficients:

	Value	Std.Error
A	2.6039374	0.1571958
B	0.4116692	0.5460119
m	0.2831045	0.2061716

Correlation:

	A	B	m
A	1.0000000	0.6047972	0.6486768
B	0.6047972	1.0000000	0.9909277
m	0.6486768	0.9909277	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	2.30991302	2.6039374	2.935387
B	0.02960105	0.4116692	5.725188
m	0.06671544	0.2831045	1.201343

Residual standard error:

lower	est.	upper
0.8873267	1.0118743	1.1774163

Degrees of freedom: 100 total; 97 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 1.454 with 1 degrees of freedom. P = 0.228

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	25	2.46	2.6039374	0.79	0.9869187	-0.729225998
2	0.2	25	2.66	2.4832579	1.16	0.9434115	0.936718046
3	1.0	25	2.03	2.0634140	0.82	0.7904106	-0.211371320
4	6.5	25	0.76	0.7597772	0.25	0.2882539	0.003864346

BMD Computation

BMD = 0.4466: BMDL = 0.2508

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.2831
se: 0.2062
var=se^2: 0.04251
Per cent. of background at unit dose: 75
Per cent. of background at the highest dose: 16
ED50 (95% CI): 2.448 (0.5875 , 10.2)

ln(Potency) -1.262
se[log(Potency)]: 0.7283
se[log(Potency)]^2: 0.5304

Day 205 F0 Adults : Male : 46181001

DIMETHOATE:205-D:BRAIN:M:WHOLE
Fri Aug 27 14:46:59 2004
MRID: 46181001 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
246.2969	256.7176	-119.1485

Coefficients:

	Value	Std.Error
A	2.3853419	0.1730838
B	1.0585396	0.1293070
m	0.5764393	0.3092732

Correlation:

	A	B	m
A	1.0000000	0.2712403	0.5940167
B	0.2712403	1.0000000	0.6492106
m	0.5940167	0.6492106	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	2.0654087	2.3853419	2.754833
B	0.8306425	1.0585396	1.348963
m	0.1987444	0.5764393	1.671907

Residual standard error:

lower	est.	upper
0.9335612	1.0645985	1.2387661

Degrees of freedom: 100 total; 97 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.0148 with 1 degrees of freedom. P = 0.903

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	25	2.37	2.385342	1.07	1.0707980	-0.071637814
2	0.2	25	2.26	2.240866	0.93	1.0064425	0.095058205
3	1.0	25	1.80	1.804064	0.74	0.8114026	-0.025042512
4	6.5	25	1.09	1.089841	0.57	0.4893233	0.001622017

BMD Computation

BMD = 0.3438: BMDL = 0.1861

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.5764
se: 0.3093
var=se^2: 0.09565
Per cent. of background at unit dose: 56
Per cent. of background at the highest dose: 2.4
ED50 (95% CI): 1.202 (0.4201 , 3.442)

ln(Potency) -0.5509
se[log(Potency)]: 0.5365
se[log(Potency)]^2: 0.2879

Day 218 F1 Adults : Female : 46181001

DIMETHOATE:218-D:PLASMA:F:WHOLE
Fri Aug 27 15:18:49 2004
MRID: 46181001 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
60.52336	68.27826	-27.26168

Coefficients:

	Value	Std.Error
A	1.6264162	0.05694833
m	0.1766754	0.01017509

Correlation:

	A	m
A	1.0000000	0.6019118
m	0.6019118	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.5172136	1.6264162	1.7434788
m	0.1575898	0.1766754	0.1980726

Residual standard error:

lower	est.	upper
0.4427904	0.5052632	0.5884226

Degrees of freedom: 98 total; 96 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 5.743 with 2 degrees of freedom. P = 0.0566

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	25	1.80	1.6264162	0.72	0.4615396	1.8804861

```
2  0.2 25 1.46 1.5699502 0.26 0.4443966 -1.2370725
3  1.0 24 1.30 1.3630210 0.23 0.3819601 -0.8083001
4  6.5 24 0.52 0.5158128 0.11 0.1348862  0.1520774
```

BMD Computation

BMD = 0.5964: BMDL = 0.5447

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.1767
se: 0.01018
var=se^2: 0.0001035
Per cent. of background at unit dose: 84
Per cent. of background at the highest dose: 32
ED50 (95% CI): 3.923 (3.504 , 4.392)

ln(Potency) -1.733
se[log(Potency)]: 0.05759
se[log(Potency)]^2: 0.003317

Day 218 F1 Adults : Male : 46181001

DIMETHOATE:218-D:BRAIN:M:WHOLE
Fri Aug 27 15:18:54 2004
MRID: 46181001 Guideline: 83-4
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
113.80303	124.18351	-52.90151

Coefficients:

	Value	Std.Error
A	1.69172268	0.08610164
B	0.05990478	1.66100676
m	0.14397945	0.24666192

Correlation:

	A	B	m
A	1.0000000	0.6287968	0.6513526
B	0.6287968	1.0000000	0.9985784
m	0.6513526	0.9985784	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.529162e+00	1.69172268	1.871565e+00
B	7.490659e-26	0.05990478	4.790743e+22
m	4.802066e-03	0.14397945	4.316909e+00

Residual standard error:

lower	est.	upper
0.4713238	0.5378224	0.6263406

Degrees of freedom: 99 total; 96 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.03187 with 1 degrees of freedom. P = 0.858

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	25	1.68	1.6917227	0.45	0.5414192	-0.1082588226
2	0.2	25	1.66	1.6454031	0.63	0.5266886	0.1385720373
3	1.0	25	1.47	1.4729049	0.48	0.4717668	-0.0307878552
4	6.5	24	0.70	0.6999786	0.21	0.2240547	0.0004682722

BMD Computation

BMD = 0.7602: BMDL = 0.3695

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.144
se: 0.2467
var=se^2: 0.06084
Per cent. of background at unit dose: 87
Per cent. of background at the highest dose: 39
ED50 (95% CI): 4.814 (0.1676 , 138.3)

ln(Potency) -1.938
se[log(Potency)]: 1.713
se[log(Potency)]^2: 2.935

Day 28 Adults : Female : 46288001

DIMETHOATE:29-D:BRAIN:F:WHOLE
Thu Aug 26 21:28:09 2004
MRID: 46288001 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
31.61144	34.59864	-12.80572

Coefficients:

	Value	Std.Error
A	2.6084883	0.22391809
m	0.1278757	0.01495178

Correlation:

	A	m
A	1.0000000	0.6418415
m	0.6418415	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	2.1780355	2.6084883	3.1240130
m	0.1000239	0.1278757	0.1634828

Residual standard error:

lower	est.	upper
0.6927794	0.9168446	1.3558523

Degrees of freedom: 20 total; 18 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 9.644 with 2 degrees of freedom. P = 0.00805

dose	n	chei	Expected	sd	Exp.SD	X2 Resid.

```
1  0.00 5 2.18 2.6084883 0.37 0.7732040 -1.2391671
2  0.85 5 3.11 2.3398259 0.46 0.6924572  2.4870295
3  2.60 5 1.53 1.8706652 0.57 0.5517889 -1.3805108
4 11.00 5 0.65 0.6389931 0.11 0.1855227  0.1326634
```

BMD Computation

BMD = 0.8239: BMDL = 0.691

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.1279
se: 0.01495
var=se^2: 0.0002236
Per cent. of background at unit dose: 88
Per cent. of background at the highest dose: 24
ED50 (95% CI): 5.42 (4.31 , 6.817)

ln(Potency) -2.057
se[log(Potency)]: 0.1169
se[log(Potency)]^2: 0.01367

Day 28 Adults : Male : 46288001

DIMETHOATE:29-D:BRAIN:M:WHOLE
Thu Aug 26 21:28:17 2004
MRID: 46288001 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
36.43884	39.42604	-15.21942

Coefficients:

	Value	Std.Error
A	2.3427153	0.22699084
m	0.1057894	0.01833608

Correlation:

	A	m
A	1.000000	0.635189
m	0.635189	1.000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.91123128	2.3427153	2.8716122
m	0.07350146	0.1057894	0.1522609

Residual standard error:

lower	est.	upper
0.5723182	0.7574228	1.1200954

Degrees of freedom: 20 total; 18 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.2449 with 2 degrees of freedom. P = 0.885

dose	n	chei	Expected	sd	Exp.SD	X2 Resid.

```
1  0.00 5 2.24 2.342715 0.69 0.7788405 -0.29489788
2  0.83 5 2.27 2.145785 0.66 0.7145351  0.38871879
3  2.48 5 1.78 1.802101 0.52 0.6020390 -0.08208481
4 10.38 5 0.78 0.781310 0.38 0.2651011 -0.01104942
```

BMD Computation

BMD = 0.9959: BMDL = 0.775

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.1058
se: 0.01834
var=se^2: 0.0003362
Per cent. of background at unit dose: 90
Per cent. of background at the highest dose: 33
ED50 (95% CI): 6.552 (4.665 , 9.203)

ln(Potency) -2.246
se[log(Potency)]: 0.1733
se[log(Potency)]^2: 0.03004

Day 1 Adults : Female : 45529702

DIMETHOATE:1-D:BRAIN:F:WHOLE
Wed Aug 18 20:21:06 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

```
      AIC       BIC    logLik
 511.0838  515.4810 -252.5419

Coefficients:
         Value    Std.Error
A 1.400226e+04 1.530550e+02
m 4.801487e-02 7.186638e-03

Correlation:
          A         m
A 1.0000000 0.5913828
m 0.5913828 1.0000000

Approximate 95% confidence intervals

 Coefficients:
         lower         est.        upper
A 1.369314e+04 1.400226e+04 1.431835e+04
m 3.536891e-02 4.801487e-02 6.518233e-02

 Residual standard error:
   lower     est.    upper
563.8050 705.5395 943.0758

Degrees of freedom: 32 total; 30 residual
```

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 2.517 with 2 degrees of freedom. P = 0.284

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	14150.00	14002.26	554.8488	698.0731	0.59861865

```
2  0.1 8 13625.00 13935.19 444.8114 694.7413 -1.26283056
3  0.5 8 13850.00 13670.10 687.1265 681.5724  0.74655058
4  3.0 8 12106.25 12123.84 826.5408 604.7383 -0.08228062
```

BMD Computation

BMD = 2.194: BMDL = 1.761

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.04801
se: 0.007187
var=se^2: 5.165e-05
Per cent. of background at unit dose: 95
Per cent. of background at the highest dose: 87
ED50 (95% CI): 14.44 (10.77 , 19.36)

ln(Potency) -3.036
se[log(Potency)]: 0.1497
se[log(Potency)]^2: 0.0224

Day 1 Adults : Male : 45529702

DIMETHOATE:1-D:BRAIN:M:WHOLE
Wed Aug 18 20:21:12 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
515.1097	519.5069	-254.5549

Coefficients:

	Value	Std.Error
A	1.365711e+04	161.84622769
m	3.992759e-02	0.00778649

Correlation:

	A	m
A	1.0000000	0.5916283
m	0.5916283	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	1.333055e+04	1.365711e+04	1.399168e+04
m	2.681049e-02	3.992759e-02	5.946226e-02

Residual standard error:

lower	est.	upper
595.7456	745.5096	996.5029

Degrees of freedom: 32 total; 30 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.4635 with 2 degrees of freedom. P = 0.793

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	13793.75	13657.11	247.0360	738.2140	0.52351076

```
2  0.1 8 13543.75 13602.69  802.4238 735.2619 -0.22674697
3  0.5 8 13293.75 13387.17  241.1838 723.5707 -0.36517900
4  3.0 8 12131.25 12115.41 1096.4024 654.5977  0.06846042
```

BMD Computation

BMD = 2.639: BMDL = 1.998

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.03993
se: 0.007786
var=se^2: 6.063e-05
Per cent. of background at unit dose: 96
Per cent. of background at the highest dose: 89
ED50 (95% CI): 17.36 (11.85 , 25.44)

ln(Potency) -3.221
se[log(Potency)]: 0.195
se[log(Potency)]^2: 0.03803

PND 11 Offspring : Female : 45529702

DIMETHOATE:1-D:BRAIN:F:WHOLE
Wed Aug 18 20:02:45 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

AIC	BIC	logLik
474.3320	478.7292	-234.1660

Coefficients:

	Value	Std.Error
A	6.328588e+03	87.826156540
m	6.888654e-02	0.009123527

Correlation:

	A	m
A	1.0000000	0.5914097
m	0.5914097	1.0000000

Approximate 95% confidence intervals

Coefficients:

	lower	est.	upper
A	6.151741e+03	6.328588e+03	6.510519e+03
m	5.256111e-02	6.888654e-02	9.028263e-02

Residual standard error:

lower	est.	upper
321.2198	401.9710	537.3039

Degrees of freedom: 32 total; 30 residual

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.4804 with 2 degrees of freedom. P = 0.786

dose	n	chei	Expected	sd	Exp.SD	X2 Resid.

1	0.0	8	6256.25	6328.588	195.3705	400.5716	-0.51077562
2	0.1	8	6350.00	6285.142	338.0617	397.8271	0.46111903
3	0.5	8	6125.00	6114.322	297.6095	387.0361	0.07803585
4	3.0	8	5143.75	5147.018	532.1369	325.9179	-0.02835973

BMD Computation

BMD = 1.529: BMDL = 1.256

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.06889
se: 0.009124
var=se^2: 8.324e-05
Per cent. of background at unit dose: 93
Per cent. of background at the highest dose: 81
ED50 (95% CI): 10.06 (7.762 , 13.04)

ln(Potency) -2.675
se[log(Potency)]: 0.1324
se[log(Potency)]^2: 0.01754

PND 11 Offspring : Male : 45529702

DIMETHOATE:1-D:BRAIN:M:WHOLE
Wed Aug 18 20:02:51 2004
MRID: 45529702 Guideline: NONGUIDELINE
Continuous Exponential Model (Decreasing)
Formula: chei = B + (A-B)*exp(-(m*dose)^g)

Variance Function: power

The BMD corresponds to a dose that results in a 10% reduction in the response relative to the control

---

Summary of Model Fitting Results

```
      AIC       BIC    logLik
 456.3905  460.7877 -225.1952

Coefficients:
         Value   Std.Error
A 6.405480e+03 65.79821265
m 5.914452e-02  0.00674665

Correlation:
          A         m
A 1.0000000 0.5917805
m 0.5917805 1.0000000

Approximate 95% confidence intervals

 Coefficients:
         lower         est.        upper
A 6.272502e+03 6.405480e+03 6541.2770815
m 4.685327e-02 5.914452e-02    0.0746602

 Residual standard error:
   lower     est.    upper
242.3740 303.3041 405.4186

Degrees of freedom: 32 total; 30 residual
```

Goodness of Fit

The chi-squared goodness-of-fit values should be taken as general indications of fit only. P-values are likely to be inaccurate to some degree

Pearson Chi-Square Statistic: 0.9782 with 2 degrees of freedom. P = 0.613

	dose	n	chei	Expected	sd	Exp.SD	X2 Resid.
1	0.0	8	6475.00	6405.480	243.4866	300.1305	0.65515803

```
2  0.1 8 6362.50 6367.707 235.6602 298.3505 -0.04936043
3  0.5 8 6143.75 6218.829 359.9975 291.3355 -0.72890062
4  3.0 8 5375.00 5364.055 290.3200 251.0788  0.12329288
```

BMD Computation

BMD = 1.781: BMDL = 1.5

Potency Measures

A unit dose (1 mg/kg) would result in 100*exp(-Potency)% of background activity

Potency: 0.05914
se: 0.006747
var=se^2: 4.552e-05
Per cent. of background at unit dose: 94
Per cent. of background at the highest dose: 84
ED50 (95% CI): 11.72 (9.372 , 14.66)

ln(Potency) -2.828
se[log(Potency)]: 0.1141
se[log(Potency)]^2: 0.01301